

Our Ref. No.: 042390.P5769

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Gang BaiApplication No.: **09/109,261**Filed: **June 30, 1998****For: A MULTI-LAYER GATE DIELECTRIC**Examiner: **Warren, Matthew E.**Art Unit: **2815****REPLY BRIEF****RECEIVED****OCT 05 2007****BOARD OF PATENT APPEALS
AND INTERFERENCES**

Mail Stop Appeal Brief - Patent
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In the Appeal Brief filed November 2, 2005, Applicant argued that claims 8-10, 13-17 and 20-21 were not obvious over Nagata in view of Momose and Moon. Specifically, Applicant argued that the combined teachings of the cited references do not describe a transistor device having a gate electrode overlying a gate dielectric formed on a semiconductor substrate comprising a first dielectric material and a second dielectric material being scalable for a set of feature size technologies defined by a gate length in the range of 25-70 nanometers, where the first material thickness and the second material thickness are determined by the following relationship:

$$\frac{t_1}{k_1} + \frac{t_2}{k_2} = \frac{t_{ox}}{k_{ox}} \quad (4)$$

The Patent Office relied on Nagata to show the relationship of Equation (4). However, Applicant illustrated that the relationship shown in Nagata, where silicon dioxide is taught to be one of the dielectric materials, is as follows:

$$\begin{aligned}\frac{T_{eff}}{E_{SiO_2}} &= \frac{T_{SiO_2}}{E_{SiO_2}} + \frac{T_{x1}}{E_{x1}} + \frac{T_{x2}}{E_{x2}} + \dots + \frac{T_d}{E_{xd}} + \dots + \frac{T_m}{E_{xm}} \\ \frac{T_{eff}}{E_{SiO_2}} - \frac{T_{SiO_2}}{E_{SiO_2}} &= \frac{T_{x1}}{E_{x1}} + \frac{T_{x2}}{E_{x2}} + \dots + \frac{T_d}{E_{xd}} + \dots + \frac{T_m}{E_{xm}} \\ \frac{T_{eff} - T_{SiO_2}}{E_{SiO_2}} &= \frac{T_{x1}}{E_{x1}} + \frac{T_{x2}}{E_{x2}} + \dots + \frac{T_d}{E_{xd}} + \dots + \frac{T_m}{E_{xm}}\end{aligned}\tag{5}$$

It is clear, that Equation (4) and Equation (5) are not identical. The Patent Office seeks to make them identical by ignoring silicon dioxide as one of the materials of Nagara. However, Nagara specifically teaches silicon dioxide as the dielectric material. In fact, the Patent Office must use Applicant's disclosure to get to Applicant's equation. See Examiner's Answer, p. 7. Applicant also notes that Morimoto, cited for its reputation of the feature size limitation of the claims, teaches only "gate oxide" (i.e., silicon dioxide) as its gate material. Moon, however, may describe irtrium oxide (Y_2O_3) in connection with the ceramic material (e.g., PZT). Moon does not disclose a particular relationship between the Y_2O_3 and ceramic material relative to a particular thickness for a gate dielectric silicon dioxide.

For the above stated reasons, claims 8-10, 13-17 and 20-21 are not obvious over the cited references. Applicant respectfully requests that the Patent Office withdraw the rejection under 35 U.S.C. §103(a).

CONCLUSION

In view of the foregoing, it is believed that all claims now pending (1) are in proper form, (2) are neither obvious nor anticipated by the relied upon art of record, and (3) are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date. If the Patent Office believes that a telephone conference would be useful in moving the application forward to allowance, the Patent Office is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

Dated: 4/10/07

By: William Thomas Babbitt

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Nedy Calderon
Nedy Calderon

4/10/07
Date

TRANSMITTAL FORM

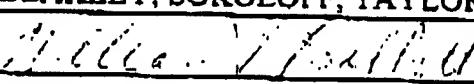
(to be used for all correspondence after initial filing)

Application No.	09/109,261		
Filing Date	June 30, 1998		
First Named Inventor	Gang Bai		
Art Unit	2815		
Examiner Name	Warren, Matthew E.		
Total Number of Pages In This Submission	7	Attorney Docket Number	42390PS769

ENCLOSURES (check all that apply)

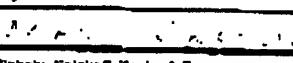
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> PTO/SB/DB <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Basic Filing Fee <input type="checkbox"/> Declaration/POA <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="text" value="Return receipt postcard"/>		
<input type="text" value="Remarks"/>		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	William Thomas Babbitt, Reg. No. 39,591 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP	
Signature		
Date	April 10, 2006	

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Typed or printed name	Nedy Calderon		
Signature		Date	April 10, 2006

Based on PTO/SB/21 (08-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wir) 11/30/2005.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

FEE TRANSMITTAL for FY 2005

Patent fees are subject to annual review.

Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$)**0.00**

<i>Complete If Known</i>	
Application Number	09/109,261
Filing Date	June 30, 1998
First Named Inventor	Gang Bai
Examiner Name	Warren, Matthew E.
Art Unit	2815
Attorney Docket No.	42390PS769

METHOD OF PAYMENT (check all that apply)

Check Credit card Money Order None Other (please identify): _____
 Deposit Account Deposit Account Number: 02-2666 Domestic Account No. _____

For the above-identified deposit account, the Depositor hereby authorizes the Bank to credit the account in the name of Blakely, Sokoloff, Taylor & Zafman LLP.

Charge fee(s) indicated below Charge fee(s) indicated below, except for the filing fee
 Charge any additional fee(s) or underpayment of fee(s)
under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20. Credit any overpayments

FEES CALCULATION

1. EXTRA CLAIM FEES

Total Claims		Extra Claims	Fee from below	Fee Paid
Independent Claims	10	20 ^o	0	\$0.00
Multiple Dependent	2	3 ^o	0	\$0.00
Extra Entries			50.00	
			200.00	

Large Entity	Small Entity	
Fee Code	Fee (\$)	Fee Description
1202	50	2202 25 Claims in excess of 20
1201	200	2201 100 Independent claims in excess of 3
1203	380	2203 180 Multiple Dependent claim, if not paid
1204	780	2204 385 "Release independent claims over original patient"
1205	300	2205 150 "Release claims in excess of 20, and dependent claims in excess of 3"

**or number previously paid, if greater. For Religious see below*

SUBTOTAL (1) (6) **0.00**

2 ADDITIONAL FEES

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
1051	130	2051	85	Surcharge - late filing fee or oath
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet
2053	130	2053	130	Non-English specification
1251	120	2251	60	Extension for reply within first month
1252	450	2252	225	Extension for reply within second month
1253	1,020	2253	510	Extension for reply within third month
1254	1,500	2254	785	Extension for reply within fourth month
1255	2,160	2255	1,080	Extension for reply within fifth month
1401	500	2401	250	Notice of Appeal
1402	500	2402	250	Filing a brief in support of an appeal
1403	1,000	2403	500	Request for oral hearing
1451	1,510	2451	1,510	Petition to Institute a public use proceeding
1480	130	2480	130	Petitions to the Commissioner
1807	50	1807	50	Processing fee under 37 CFR 1.17(g)
1808	180	1808	180	Submission of Information Disclosure Stmt
1809	790	1809	365	Filing a submission after final rejection (37 CFR § 1.139)
1810	700	2810	365	For each additional invention to be examined (37 CFR 5

Fee Paid

SUBTOTAL (2)

15

SUBMITTED BY

SUBMITTED BY		Complete (if applicable)			
Name (Print/Type)	William Thomas Babbitt	Registration No. (Attorney/Agent)	39,591	Telephone	(310) 207-3800
Signature				Date	04/10/06
Based on PTIO/SB/17 (12-04) as modified by Blankley, Solonoff, Taylor & Zafren (BSTZ) 4/10/2006 SMB 17					

Application No.: 09/109,281 Filing Date: 6/30/1998

Docket #: 42380.P5769

Date Mailed: 04/10/2000 Due Date(s): 04/10/2000

Client: INTEL CORPORATION

Atty/Sec: WTB/ndc

Title: A MULTI-LAYER GATE DIELECTRIC

First Named Inventor: Gang Bai

The following has been received in the U.S.P.T.O. on the date stamped herein:

Certificate of Mailing

Fee Transmittal (original & copy)

Reply Brief (3 pgs)

Transmittal Letter

Postcard

Assignee: Intel Corporation